

3.—CONTRIBUTIONS TO THE FAUNA OF ROTTNEST ISLAND.

No. VI.

NOTES ON THE ODONATA AND NEUOPTERA.

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Up to the present little has been done in the way of collecting Neuopterous insects on the Island, and these notes have been prepared with a view of attempting to increase the interest in this most interesting group of insects, which include archaic as well as highly developed types.

Order—**ODONATA.**Suborder—**Anisoptera.**Family—**AESCHNIDAE.**

Aeschna brevistyla, Ramb.—This is one of our largest Dragon-flies, and is a species of the tropical genus *Austrogymacantha*. It is abundant throughout Australia except in the tropics, is common in Tasmania, and is the only known Aeschnid in New Zealand. This family contains the true hawking dragon-flies, distinguished by their large size, their usually conjoined eyes, their wings with the triangles closely similar and both elongated in the direction of the wing axis. The males have the anal angle of the hindwing angulated, females always with well developed ovipositor. The larvae are of a very characteristic shape and are the largest to be found in our pools and streams; they have a long flat mask with a strong movable hook. I have kept these larvae in captivity for as long as three years and have observed how they stalk their prey with great cunning and fearlessness, even attacking tadpoles much larger than themselves, and when once they get a grip they hang on with bull-dog tenacity.*

Family **LIBELLULIDAE.**Subfamily **TRAMEINAE.**

Tramea limbata, Desj.—The Trameinae contain the most highly evolved of all dragon-flies and are either tropical or sub-tropical. *T. limbata* is certainly the most handsome representative of all of our dragon-flies; the large fulvous patch in the anal field of the hind wing serves as a means of identity at a glance. This is also one of, if not the most, shy of these insects, and if missed by the first sweep of the net they generally rise to a great height and dart away at a high speed. I have in my collection a specimen that was taken in Gage Roads more than a mile from land.

* *Anax papuensis*, Burn., was taken on the island in April, 1930.—L.G.

Subfamily LIBELLULINAE.

Orthetrum caledonicum, Brau.—This is one of the most common of our dragon-flies, and can be seen almost anywhere near the river; it has a great habit of resting on small pebbles on the footpath. The sexes are very dissimilar, the male, when mature, being covered with a pale blue pruinescence; the female is yellow and black and might be taken for a different species.

Subfamily SYMPETRINAE.

Diplacodes bipunctata, Brau.—Is abundant in Australia, is not found in Tasmania, and is the only Libelluid found in New Zealand. The male is dull red with black spots on the abdomen, the female is yellowish-brown; these are amongst the smaller species of dragon-flies, and are quite common around most of our streams and pools. I have taken them around Perth, in the hills, and as far south as Bunbury.

Subfamily LEUCORRHINIINAE.

Austrothemis nigrescens, Martin.—A very handsome and rather rare dragon-fly, found chiefly in Tasmania and W.A. The abdomen is club-shaped; in the male it is coloured bright red and black and in the female yellow and black. At rest it has a very characteristic attitude, with the wings thrown forward of the thorax; it is very shy, and must be taken with a quick sweep of the net, as no second opportunity will be given if not taken by the first sweep. I have taken them as far south as Bunbury, also at South Perth. The larva is unknown.

Family CORDULIIDAE.

Hemicordulia tau. Sel.—This genus, of which *H. tau* is the commonest, has its headquarters in Australia and belongs to the group which marks the highest point yet reached in the order. *H. tau* can be identified by the olive green colour of the back of the abdomen and the black T mark on its pale yellow frons, from which it derives its name. Dr. Tillyard says it occasionally swarms in great numbers and appears to travel a long distance, though not yet recorded at sea. It has, however, recently (1917) colonized Tasmania across straits 200 miles wide. It is common around Perth.

Sub Order **Zygoptera**—(Damsel Flies).

With few exceptions, the members of this sub-order rest with their wings folded back above the abdomen; the larvae are slender in build and breathe by means of three leaf-like, caudal gills, situated at the end of the abdomen, though this does not seem to be their only means of breathing, for I have, more than once, seen specimens which have lost their gills live and mature. A peculiar fact noticed on Rottneest Island is that, though usually inhabiting fresh water, there they were found in water of great salinity. Dr. Tillyard says "the larvae have been known to withstand a salinity up to a density of 1.01 (sea water 1.026), but at that point the larva could live, but not undergo metamorphosis." I have not actually seen the metamorphosis take place at Rottneest, but from the fact that the larvae were living in the salt water, and the imagines were flying in numbers, whilst there was an entire absence of fresh water, I think it most probable that these insects had reached full maturity in the exceedingly salt water there.

Three species of this sub-order were taken.

Family LESTIDAE.

This is a world-wide family represented in this country by the genus *Austrolestes*; most of the species are bronze and blue, and the wings expand about two inches.

Austrolestes analis. *Ramb.*—Is a very common insect, and is found over the greater part of Australia; it is very variable both in size and colouring, immature specimens have a pinkish colour, the mature insect being pale blue.

Austrolestes psycbe. *Selys.*—A somewhat smaller insect than the former, also common to the greater part of the Southern half of the continent, the abdomen being more or less blue with a black or bronze dorsal mark. Both of these insects breed in still water and are rarely, if ever, found in running water; they are essentially inhabitants of the swamps.

Family COENAGRIIDAE.

Ischnura aurora. *Brau.*—This is one of our smallest and most brilliant species; the male has a red abdomen tipped with bright blue, and the contrast is very striking. It appears most handsome as it hovers in the sun amongst the rushes on the edge of a waterhole or swamp; the female is much quieter in colour, being of a uniform bronze green. I have seen these in great numbers as far south as Bunbury; they are also common around Perth.

References :—

- Tillyard, R. J.—“Insects of Australia and New Zealand.”
 do. “The Dragonflies of S.W. Australia,” Proc. Linn. Soc. N.S.W., xxxii.
 do. “Life history of *Lestes leda*, Selys.” Proc. Linn. Soc. N.S.W., xxxi.
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Order NEUROPTERA.

Suborder Planipennia.

Family MYRMELEONIDAE.

Myrmeleon uniseriatus, *Gerst.*—The larva of this insect is a pit-forming “ant-lion.” Their pits are very common in the bush, particularly in the fine sand at the base of large trees; the cocoon is spherical, composed of grains of sand woven in with the silk, and is placed at the bottom of the pit. This is one of our commonest and plainest lacewings, is found right through the S.W. portion of the State, and occurs as far north as Queensland. The triangles of the fore wings are composed of simple cells.

Acanthaclisis fundata. *Walk.*—The larva of this species does not build a pit, but travels about just under the surface of the ground with eyes and strongly toothed jaws exposed; it usually progresses backwards, and on clear sandy patches in the bush its tracks can often be seen, particularly in the morning, as it is mostly nocturnal in its wanderings. The cocoon is similar to that of *M. uniseriatus*, only larger, and is placed about two or three inches

underground; the pupa emerges from the cocoon and works its way to the surface, where it remains with the head and thorax exposed; the skin splits down the back and the imago emerges, leaving the exuvia sticking in the sand. This species has a double row of cells throughout the costal space of the forewing, and is a very handsome insect with a hairy body and densely reticulated wing venation.

Reference :—Tillyard, R. J.—“Insects of Australia and New Zealand.”

Note.—The Order Trichoptera is represented by one species of Caddis-fly, not yet identified, but which Dr. Tillyard believes is a new species of Triplec- tides. The Doctor is now waiting further material to determine and describe this insect. This is of exceptional interest, from the fact that the larva lives in the salt lakes and makes its case of silk covered with grains of sand, in a tubular form; the remarkable fact is that most of this order lives in fresh water, and are vegetable eaters, but this species has evidently adapted itself to water the salinity of which is much greater than the ocean itself.